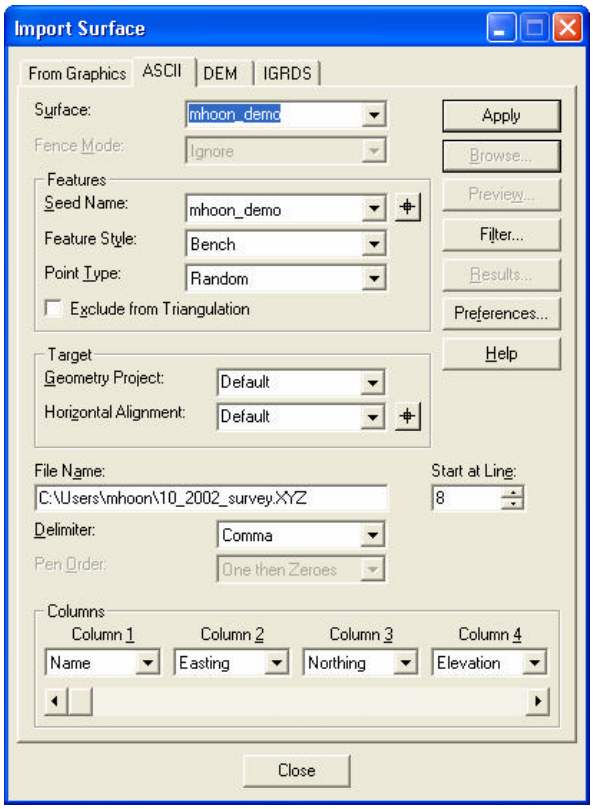
Creating surfaces for use in the program:

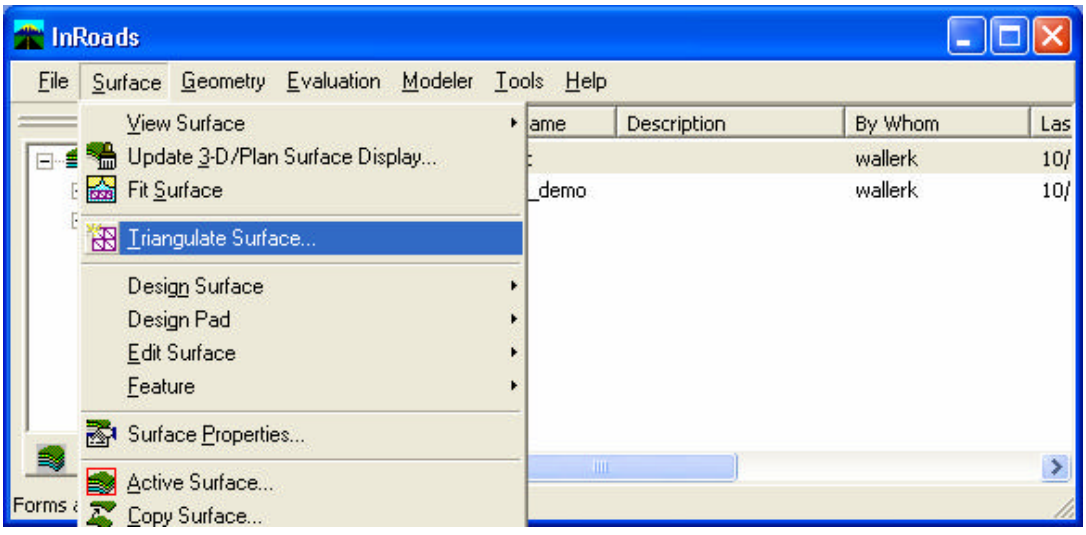
Step 10. You should have a **xyz** file or **dtm** file from the survey contractor. You will need to make this into a **ftn** file for the Revetment program. There are two ways to convert the **xyz** file. If you are using a sweep survey, go to Method 3 because your surface may need to be thinned out some more to not overload your machine.

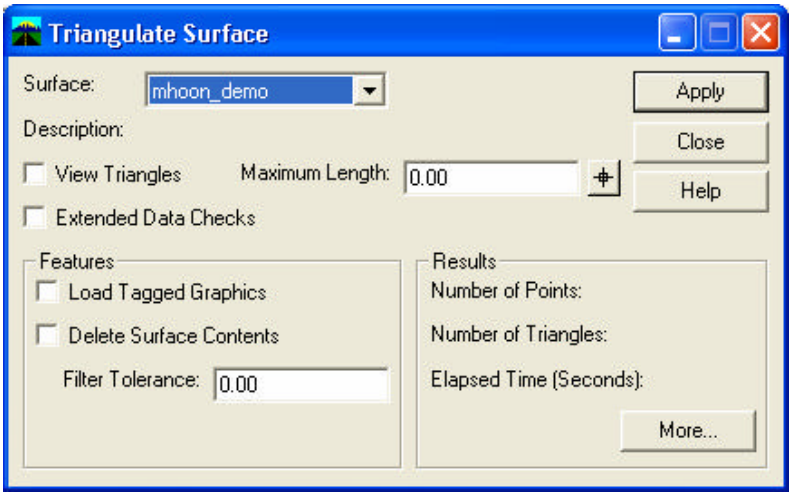
Method 1 - Making the FTN file using Inroads and Itellithin

Method1 Step 1. In INROADS, import the xyz file. You need to be aware of how the **xyz** file is setup. Thus, you may need to look at the file in notepad or other similar program. This information is important for the final setup of the following screen which is the area for COLUMNS. Once you have filled in the fields for surface, seed name, file name, start at line, delimeter, and each of the columns then you press the apply button to begin the import process.

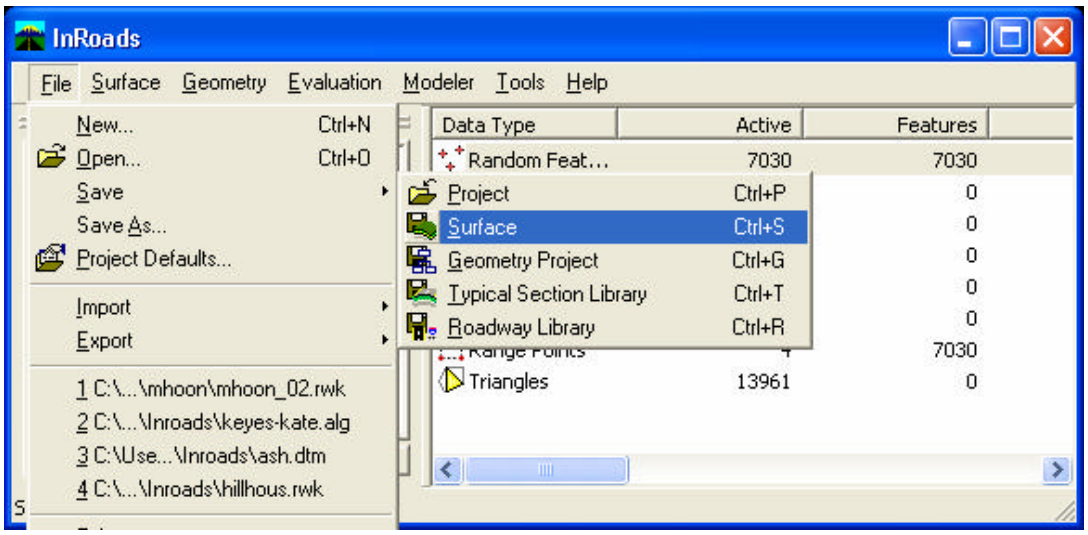


Method 1 Step 2. Once the surface has been imported, you will need to Triangulate the surface

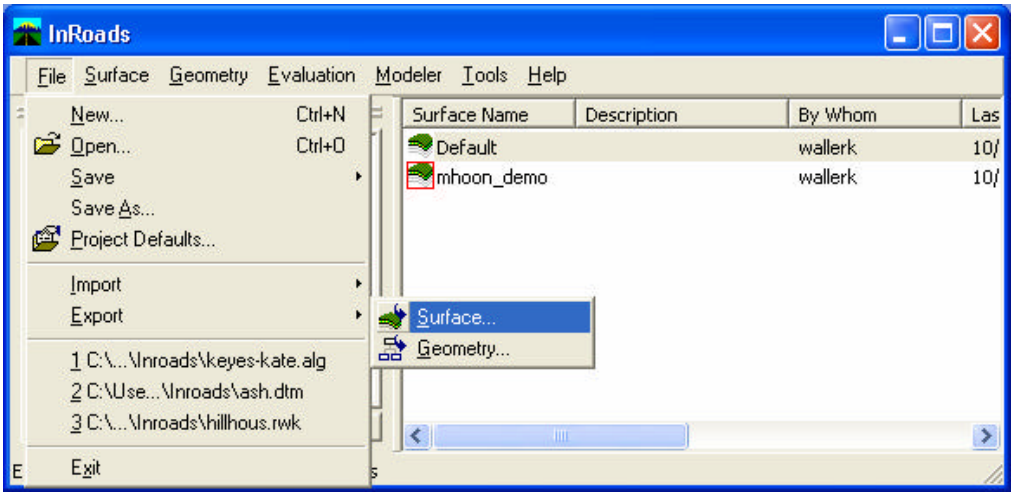


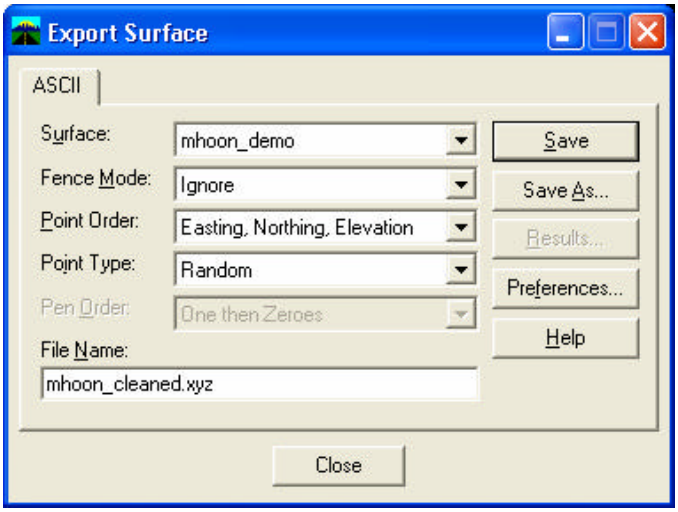


Method 1 Step 3. Save out as a DTM file by going to FILE…SAVE…SURFACE making sure to name the surface prior to pressing the SAVE button.

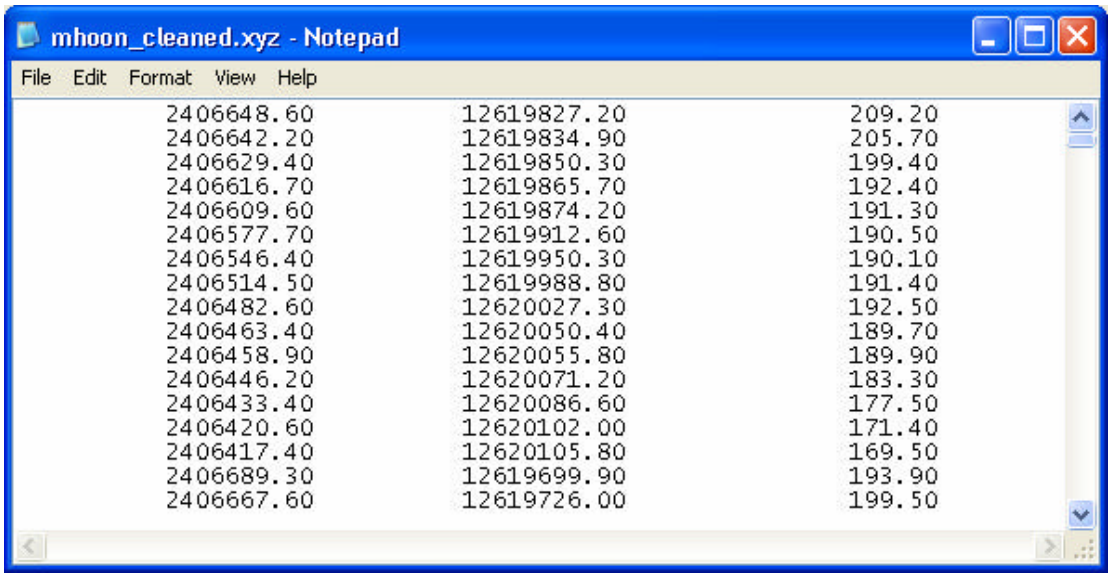


Method 1 Step 4. Export the DTM file as an ASCII file by going to FILE…EXPORT…SURFACE making sure to give the surface another name with the extension **.xyz**





Method 1 Step 5. Go into to ASCII file using notepad or other editing program and eliminate the contractor's comments on the first few lines. You should just be left with just the easting, northing, and elevation of each point. This is what the cleaned file should look like. It should only have the **Easting Northing Elevation** in the file.

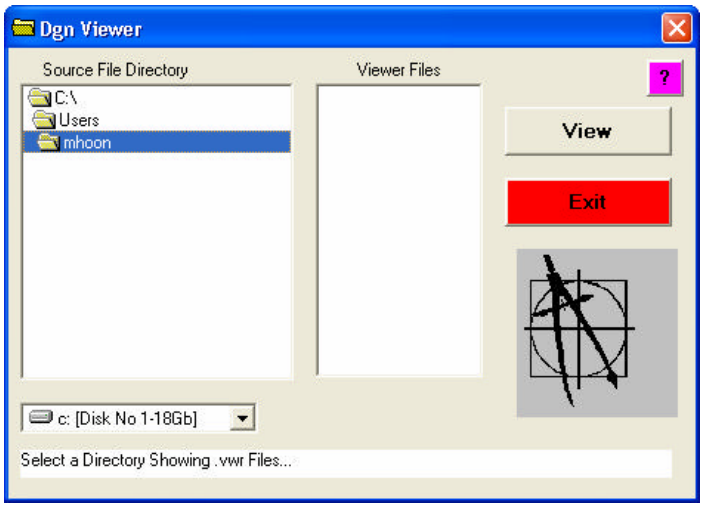


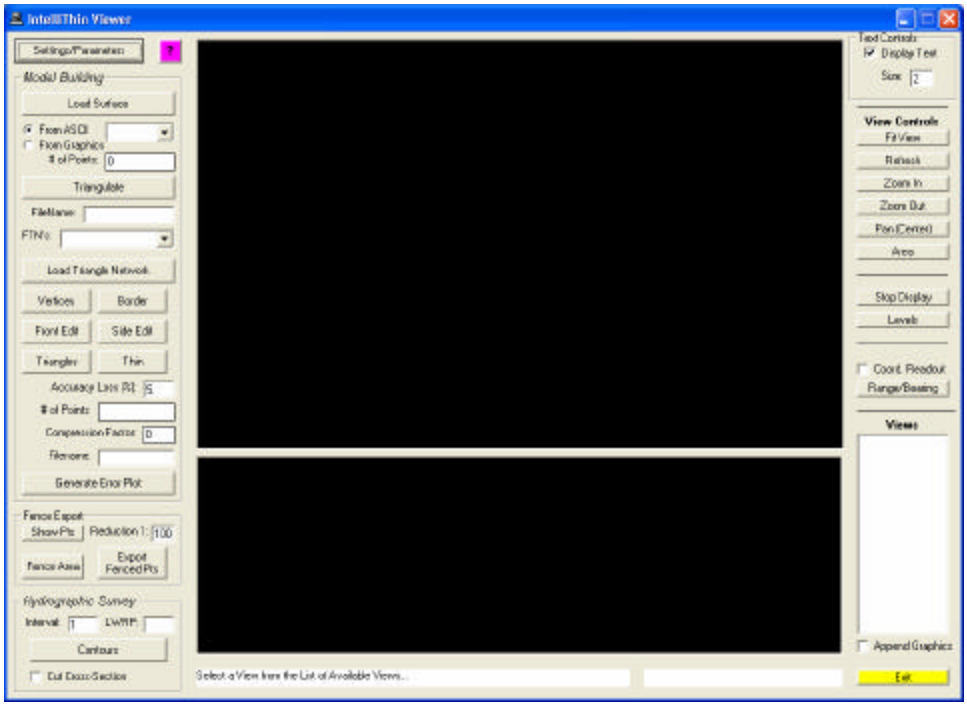
Method 1 Step 6. Once you have this format for the data, then you can use the Revetment program to make the FTN file needed or you can use the Intellithin Program to make the FTN file needed for the Revetment design.

a. **Using the Intellithin Program**:

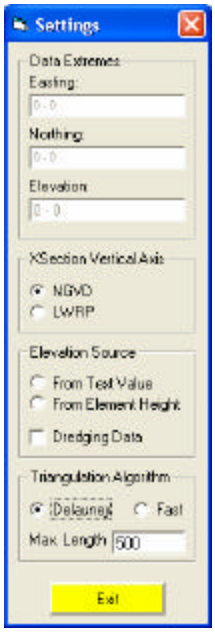
The latest version of this is 1.14 dated 21 June 2004. This is the initial screen that will appear. Just click on the **Enter Analyst** button

This is the next screen that will appear next on which you will need to locate the directory in which all the work is being performed and click on the **View** button.





This is the next screen that will appear. Click on Settings/Parameters at the top left of the screen. You will need to set the Triangulation Algorithm Method to Delauney Method for all the quick small surveys. This will triangulate the same way as Inroads. If you have a sweep survey, you will choose the fast method for triangulation.



This is what the Settings window looks like.

Under the Model Building, you will see a pulldown menu next to the **From Ascii**. This should have all the surfaces in your working directory and will allow you to choose the one that you have cleaned up (the xyz file must not have any header information in it in order for the triangulate it) and want to make into a FTN file.

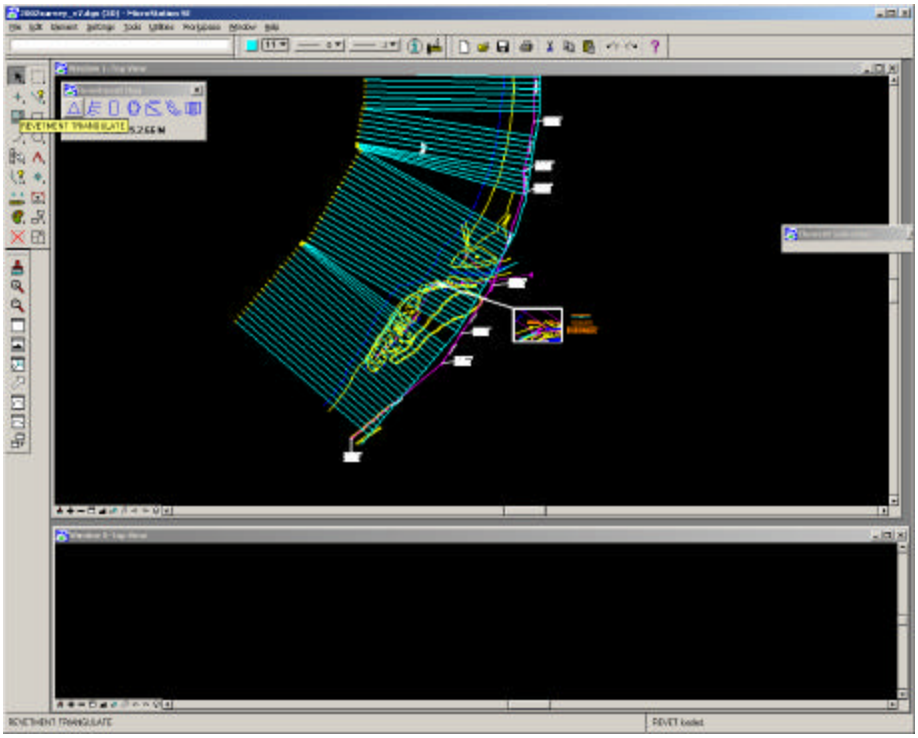
Once the surface is chosen the you will need to click on the **Load Surface** button.

Once the file is loaded, then click on the **Triangulate** button. This will complete the process and you will now have a FTN file.

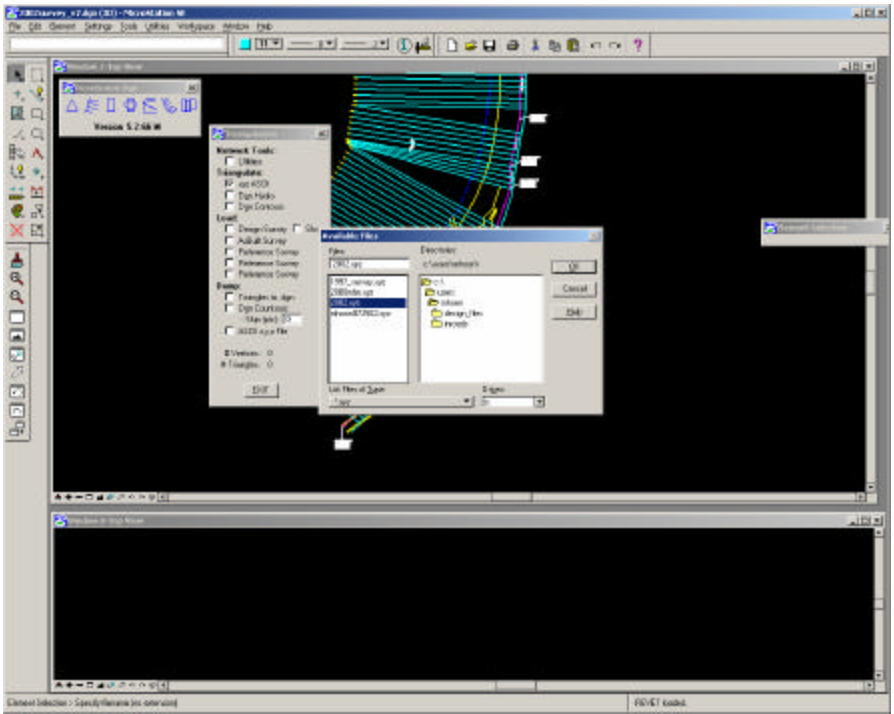
Method 2 – Making your FTN file in the Revetment Program

Method 2 Step 1. Making your FTN file through the Revetment Program. This is a much slower process this way and definitely not recommended for sweep surveys. Here are the steps if you choose to do it this way. You will need to go into Microstation SE and load the Revetment program by typing in mdl load revet.

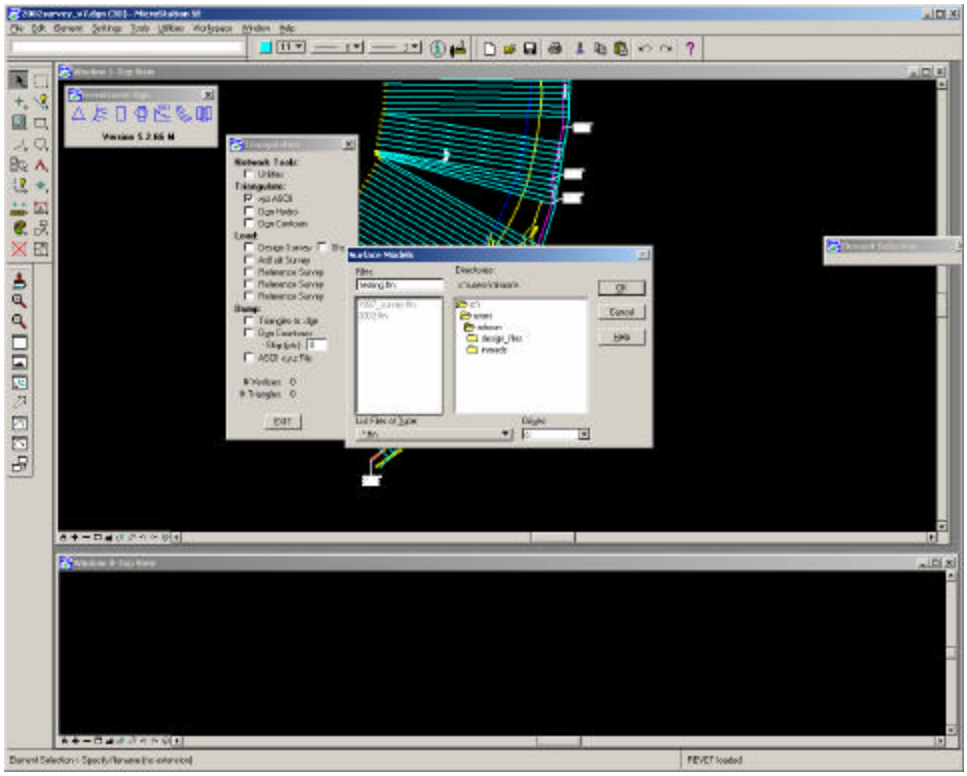
Method Step 2. Click on the first button that looks like a triangle (called the Revetment Triangulate button as show below).



Method 2 Step 3. Toggle on XYZ ASCII and choose the cleaned up xyz file (only has the easting northing and elevation data for each point – no other data in the file).



Method 2 Step 4. Name the FTN file that you are creating in the Revetment program.

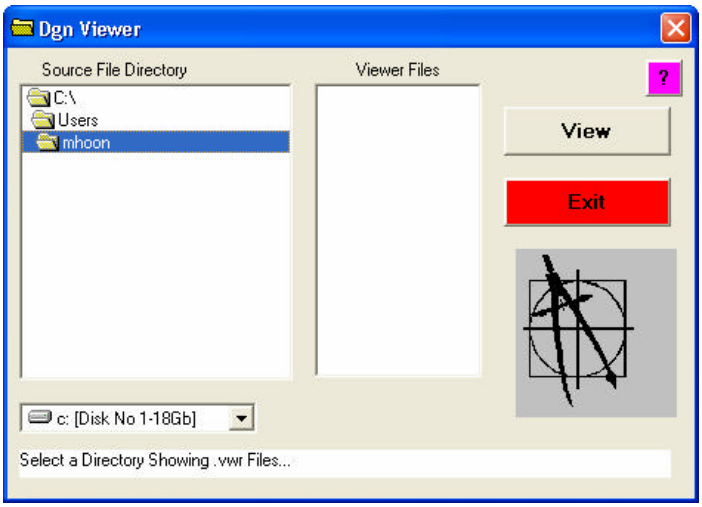


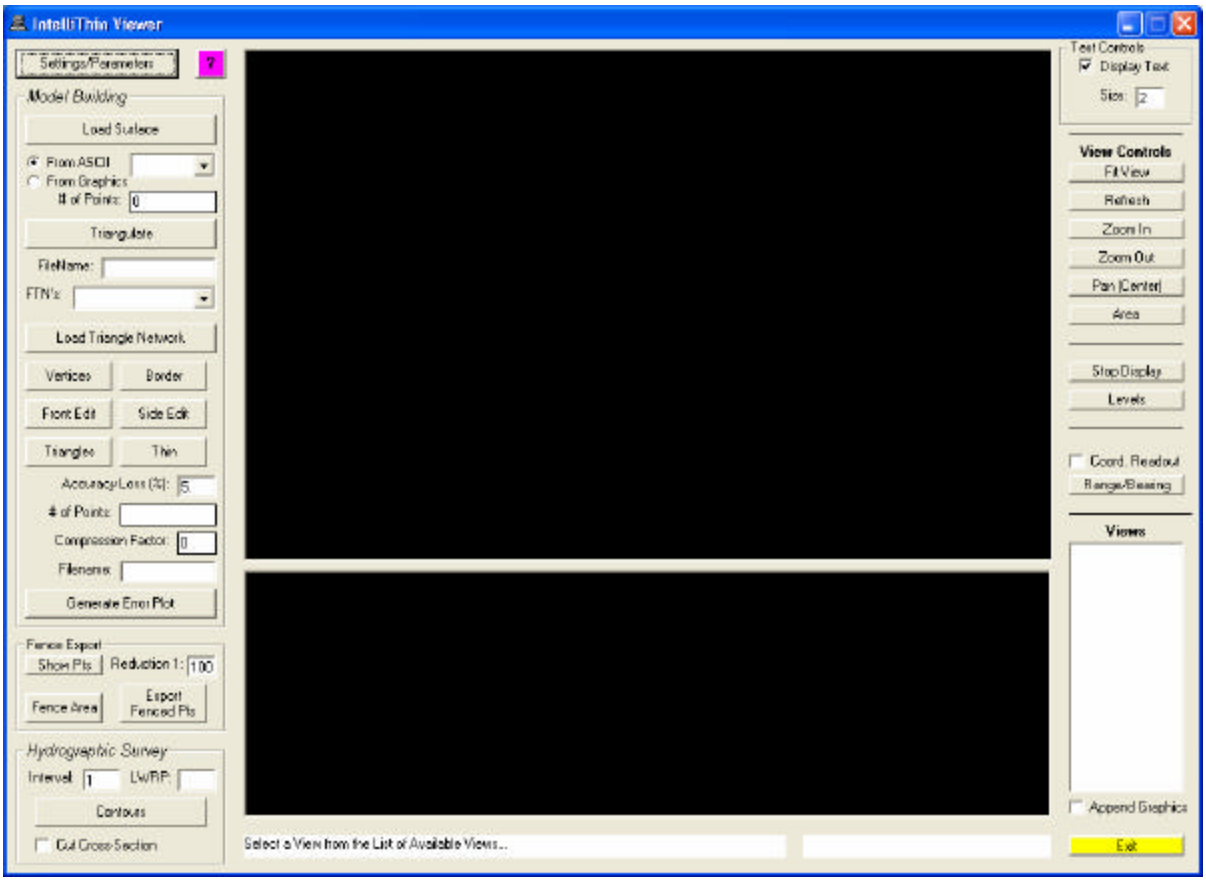
Method 3 – Thinning your surface prior to making an FTN.

Method 3 Step 1. Open Intellithin

This is the initial screen that will appear. Just click on the **Enter Analyst** button

This is the next screen that will appear next on which you will need to locate the directory in which all the work is being performed and click on the **View** button.





Method 3 Step 2.
This is the next screen that will appear.

Click on the pull down menu beside From ASCII to choose the appropriate xyz file that you want to thin out.

Method 3 Step3.

Click on the Load Surface. This may take a few minutes because it is such a large file.

Method 3 Step 4.

Once the file is loaded, you will be prompted on the bottom of the screen that the surface was loaded. Click on the Triangulate button to begin the triangulation process. This will also take some time to do. Be Patient! Watch the bottom of the screen which will let you know how things are progressing.

Method 3 Step 5.

Once the file has been triangulated, you can read the prompt on the bottom of the screen which should read that the triangulation is complete. Now, click on the Generate Error Plot button. Make sure that you do not put anything on top of the window or have your screen saver come up because you will not see the plot that is generated. Again this may take some time. Be Patient!

The plot will show the optimal accuracy loss which is most beneficial for the number of points that you have in the survey. The vertical axis shows the number of points remaining. The horizontal axis shows the accuracy loss. This plot will be displayed in the bottom window. It will start with a flat slope the progress into a steeper slope then begin to flatten out again. The point where the plot flattens out again is the optimal point for accuracy loss. This is the point where eliminating those points will not affect the overall surface and by eliminating any more points will not help you any more.

Accuracy loss can be thought of in contour intervals. For example: If you have contours ranging from 0 to 100 then 5% accuracy loss can mean thinning to 5 ft contours. If you have contours ranging from 0 to 50 then 5% accuracy loss can mean thinning to 2.5 ft contours. The program is designed to do is determine the number of points that can be eliminated without disturbing the whole contour.

Method 3 Step 6.

Choose the optimal point off of the plot where to graph begins to flatten out and pick off the percentage. This will be the percentage of accuracy loss that you will place in the box next to the accuracy loss (%).

Method 3 Step 7.

Click on the Thin button and wait for the prompt to read that thinning was complete. Now you have a thinned out FTN file that may be used in the Revetment Program.